

Remarks

Reconsideration and allowance of the subject application are respectfully solicited.

Claims 1-16 remain pending in the application, with Claims 1, 6, 7, 12 and 13 being independent and having been amended herein.

Claims 1-16 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,576,745 (Matsubara) in view of European Patent Application No. 0 569 201 (Ohsima et al.). This rejection is respectfully traversed.

With the claimed arrangements and methods, since whether or not ink ejection of the ink jet printhead is induced due to the energy variation can be detected in the form of a temperature change, the energy for carrying out one ink ejecting operation is changed, thereby monitoring the temperature change at each time the energy is changed.

In Matsubara, referring to Fig. 15, a drive pulse width as a drive condition is set on the basis of a temperature change. With this arrangement, two drive pulses as shown in Fig. 15 cause one ink ejection, i.e., two pulses are used per one printing operation. In other words, Applicant submits that Matsubara only teaches the use of two drive pulses of different energies while carrying out one printing operation. Furthermore, while Matsubara is directed to monitoring non-ejecting conditions, it is not directed to determining a threshold as to whether or not ink ejection should be carried out.

Accordingly, Matsubara fails to disclose or suggest at least monitoring temperature of an ink jet printhead in each supply of a plurality of various drive energies for carrying out one ejecting operation, and judging a threshold drive energy between a

condition where an ink ejection of the ink jet print head was induced and a condition where the ink ejection of the ink jet print head was not induced using a value for each supplied drive energy and a value for each monitored temperature, as is recited in independent Claims 1, 7 and 13.

Nor does Matsubara disclose or suggest monitoring temperature of an ink jet print head in each supply of a plurality of various drive energies and for carrying out one ejecting operation, and determining a threshold drive condition between a condition where an ink ejection of the ink jet print head was induced and a condition where the ink ejection of the ink jet print head was not induced using a value for each supplied drive energy and a value for each monitored temperature, as is recited in independent Claims 6 and 12.

Thus, Matsubara fails to disclose or suggest important features of the present invention recited in the independent claims.

Ohsima et al. describes a method of judging a discharge state of an ink jet recording head. As understood by Applicant, Ohsima et al. detects an ink remaining volume by using known energy inducing ink discharge and energy not inducing ink discharge. Ohsima et al. is not directed to determining a threshold between an ink ejection condition and an ink non-ejection condition, but monitoring a temperature change while applying various energies for carrying out printing operations. Therefore, Ohsima et al. fails to remedy the deficiencies of Matsubara noted above with respect to the independent claims.

Thus, independent Claims 1, 6, 7, 12 and 13 are patentable over the citations of record. Reconsideration and withdrawal of the § 103 rejection are respectfully requested.

For the foregoing reasons, Applicant respectfully submits that the present invention is patentably defined by independent Claims 1, 6, 7, 12 and 13. Dependent Claims 2-5, 8-11 and 14-16 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

This Amendment After Final Rejection is an earnest attempt to advance prosecution and reduce the number of issues, and is believed to clearly place this application in condition for allowance. This Amendment was not earlier presented because Applicant earnestly believed that the prior Amendment placed the subject application in condition for allowance. Accordingly, entry of this Amendment under 37 CFR 1.116 is respectfully requested.

Applicant submits that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejection set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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